

PURPOSE

The oyster industry in North Carolina is based on the success of populations of the eastern oyster Crassostrea virginica. Wild populations were an important source of high-quality oysters at the turn of the century. However, overharvesting and a lack of an effective management program have lead to a precipitous decline in harvest since that time. Annual landings have decreased from 1.5-1.8 million bushels from 1890-1900, to less than 300 thousand bushels since 1960. This pattern of decline is similar to other oyster producing regions of the eastern United States.

In order to increase the size of North Carolina's oyster populations, the North Carolina Division of Marine Fisheries (NCDMF) initiated a program of shell planting in the late 1940's. Such programs have been shown to be effective means of increasing oyster density when over-harvesting and excess siltation removes the hard substrata necessary for oyster settlement. However, the success of a particular shell planting will vary depending on spatial and temporal patterns in the settlement, growth, and survival of oysters. Although these patterns have been studied intensively along the east coast of the United States, relatively little is known of North Carolina waters.

We undertook the present study to determine how the environment (location, depth, and salinity) affected oyster demography (recruitment and growth) in the coastal waters of North Carolina. Recruitment here is defined as larval settlement and survival of spat for up to three weeks. We were interested in identifying the conditions for the highest production in order to evaluate the efficacy of the State's cultch planting program. Is cultch presently being planted in those areas with the highest potential yields? What is the best time for the planting of cultch? What other steps can be taken to enhance yield? Answers to these questions are necessary if North Carolina's oyster industry is to regain some of its previous strength.

RESULTS/CONCLUSIONS

From 1988 to 1990, we investigated the effects of location, salinity, and depth on recruitment and growth of the eastern oyster Crassostrea virginica in Pamlico and Core Sounds, North Carolina. We measured length and density of spat settling on oyster cultch deployed at deep (~3 m) and shallow (~1 m) depths at 6 sites in areas with low salinity and 6 sites in areas with high salinity. These data were compared with similar data taken at some of these sites by the North Carolina Division of Marine Fisheries since 1981 as part of their cultch planting program.